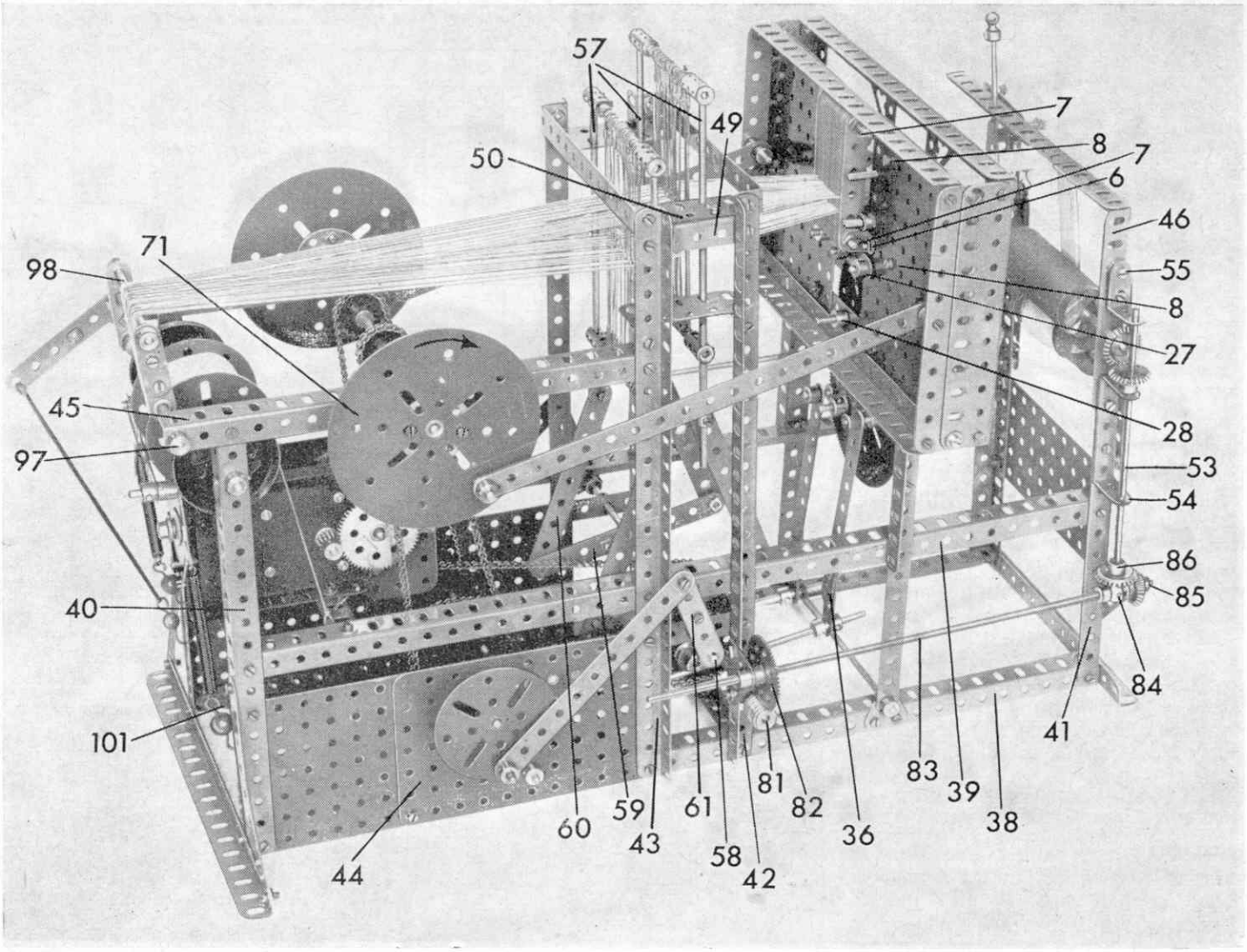


Powered by a Meccano E15R Electric Motor, this correctly-working Ribbon Loom weaves real material

GET WEAVING WITH THIS MECCANO RIBBON LOOM

SAYS SPANNER

YOU don't have to live in the heart of the cloth-making country to appreciate the fascinating action of a machine that, at the flick of a switch, performs all sorts of intricate movements which combine to result in a piece of properly-woven cloth. You don't even have to live in the heart of the cloth-making country to see one of those machines in operation. No matter where you live, all you require is a good stock of Meccano parts, this issue of 'Meccano Magazine', and you can build your own machine—and weave your own material!

Described below is an automatically operated model of a Ribbon Loom, powered by a Meccano E15R Electric Motor. It incorporates all the major features of a full-size commercial loom and it weaves real material in the same way as the original. Construction is not too complicated, but great care must still be taken at every stage, particularly with adjustment of the various operating movements involved, otherwise it will be difficult to achieve the smooth running that is essential if the loom is to operate successfully. Before giving building instructions, however, I should explain some of the technical terms used.

The 'Laysword', incorporating the 'Reed' and 'Shuttle', is the pivoted, rectangular-shaped construction that moves backwards and forwards to pack the lateral 'Weft' threads together, thus producing tightly-woven material. The Reed is a built-up arrangement of several closely-spaced Strips, which serve to separate the lineal 'Warp' threads, only three threads passing through each space or 'dent' in the Reed. The Shuttle is the built-up part on which the Weft thread is wound and which is passed between the Warp threads to produce the weave. In a piece of woven material the Warp threads are those running from one end to the other, while the Weft thread is that running from side to side.

LAYSWORD AND REED

It is best to build this part of the Loom first, as a separate unit, and to fit it to the main framework at a later stage. Incidentally, I feel it is essential that all bosses, used not only in this section of the Loom, but in every section, carry either two Grub Screws or two Set Screws. With the loom completed, none of the Rods must be allowed to slip and the best way of ensuring this is to mount a Grub or Set Screw in each transverse tapped bore of the Bosses.

Two 5½ in. by 3½ in. Flat Plates 1 and 2 are bolted to a rectangle obtained from two 9½ in and two 5½ in. Angle Girders 3 and 4, with Angle Brackets being held by Bolts 5. Further Angle Brackets are then fixed 3 in. away from Bolts 5 by means of the Bolts 6. On two 2 in. Screwed Rods 7, mounted in the Angle Brackets, eighteen 3 in. Strips and seventeen Washers are placed, to result in seventeen spaces or 'dents'.

Eight ¾ in. Bolts 8, each tightly held by a

Nut, are fixed, four in the 5½ in. Angle Girders 3 and four in the Flat Plates 1 and 2 as shown. A second Nut, followed by a Washer, is now placed on each of the Bolts 8 about two threads away from the first Nut. Four 3½ in. Flat Girders 9 are then bolted together through one of their elongated holes, by Bolt 10, the two inner Girders being raised ⅛ in. to make a groove. Another three similar arrangements are built up, then all four are mounted on Bolt 8 and held in place by a Washer and Nut on each Bolt. A 6½ in. Rack Strip is placed in the groove, and the Flat Girders are adjusted so that the Rack Strip will glide from one side to the other. The 6½ in. Rack Strip is now no longer required and is removed.

Two 5½ in. Flat Girders 11 and a 5½ in. Angle Girder 12 are secured to each Angle Girder 3, then Girders 12 are connected by a 9½ in Angle Girder 13 and two 9½ in. Strips 14 and 15. Four 1 in. Corner Brackets 16 and 17 are now bolted in position. Two ½ in. fixed Pulleys 18 are mounted on 2 in. Rods journalled in the Flat Plates and Corner Brackets, the Flat Girders resting in the Pulley grooves. It will be found advisable to fix the ½ in. Pulleys on the output shaft of the Motor and then hold a hack-saw blade in the groove while the Motor is run to slightly deepen and square the bottom.

LOOM FRAMEWORK

Both sides of the main framework of the Loom are similarly built, therefore, it is necessary for me to describe only one of them. Two 18½ in. Angle Girders 38 and 39 are connected at their ends by two 9½ in. Angle Girders 40 and 41 and by two 12½ in. Angle Girders 42 and 43 in the centre. Girders 40 and 43 are connected at their lower ends by two 5½ in. by 3½ in. Flat Plates 44 overlapped five holes, and by a 9½ in. Angle Girder 45 at their upper ends. Girder 41 is then extended upwards by a 4½ in. Angle Girder 46. Girders 42 and 43 are now connected by a 2½ in. Strip 47, a 2½ in. Flat Girder 48, attached by Angle Brackets, and by a 2½ in. Angle Girder 49 to which a 2½ in. Flat Girder 50 is bolted. The sides are connected by 5½ in. Double Angle Strips, various Angle Girders and a 5½ in. by 2½ in. Flat Plate, as shown.

Two 4½ in. Strips 51 are fixed, one each, to Angle Girders 41 by ⅜ in. Bolts, four Washers on the shank of each Bolt being used as spacers. A Wood Roller, covered with sandpaper is secured to a 6½ in. Rod carrying a ⅞ in. Bevel Gear 52. Another two ⅞ in. Bevel Gears are mounted on a second 6½ in. Rod 53, journalled in a 2½ in. by 1 in. Double Angle Strip 54 and a 1 in. by 1 in. Angle Bracket 55. A second Wood Roller, on another 6½ in. Rod 56 is held against the first Roller by Tension Springs. These Tension Springs are mounted on the Rod, their other ends being fixed to Loaded Hooks attached to one of the Angle Girders joining the sides as shown. The Rod, incidentally, is journalled between Strips 51 and Girders 41, being free to move up and down.

HEALD FRAMES AND OPERATING MECHANISM

Two Heald Frames are included in the model, each being built up from two 18 in. Rods 57. Mounted on each of these Rods are two Couplings, the corresponding Couplings on the two Rods being connected by two 3 in. Rods. Twenty-six Healds are now placed on these 3 in. Rods, care being taken to see that all the 'eyes' face the same way. When both frames have been completed, they are mounted in Flat Girders 48 and 50 by removing one 8 in. Rod at a time. Once in place it is important that the frames be square and that they slide freely in the elongated holes of the Flat Girders.

An 8 in. Rod 58, carrying two Double Arm Cranks, is journalled in 2½ in. Strips 47. The Double Arm Cranks are so placed on the Rod that they lie opposite 8 in. Rods 57. A 4½ in. Strip 59 to each end of which a 4½ in. Strip 60 is lock-nutted, is bolted to each Double Arm Crank, the Double Arm Cranks being positioned in the centre of the Strips. Strips 60 are now connected to the corresponding Rods 57 by Collars, situated ⅞ in. from the lower Coupling. A Crank, extended by a 2½ in. Strip 61, is secured at each end of Rod 58. Note that Strips 61 are set at right angles to Strips 59.

Four 2 in. Sprocket Wheels, one numbered 63 in the illustration, and the two adjacent ones numbered 64, are connected by two 3½ in. Screwed Rods. The Sprocket Wheels are arranged on the Rods in pairs with the bosses of the Sprockets making up each pair, touching. The pairs themselves are separated by a distance of 1½ in. (This space is actually between Sprockets numbered 64 in the illustrations.) Nuts on the Screwed Rods are tightened against both sides of all the Sprocket Wheels, then the complete unit is mounted on an 8 in. Rod 62, journalled in Flat Plates 44 and held in place by Face Plates 65 at each end.

A 5½ in. Strip 66 is lock-nutted to 2½ in. Strip 61 and, at its other end, is held by a Collar on a Threaded Pin fixed in Face Plate 65. When this Face Plate is rotated, the linkage should move the Heald frames up and down in an opposite action. In other words, when one frame is up, the other should be down, and vice versa.

LAYSWORD AND SHUTTLE DRIVE

When fixed in position in the Loom, the Laysword is pivoted on a 6½ in. Rod 67, mounted in 1 in. Triangular Plates bolted to Angle Girders 38. An 8 in. Rod 68, carrying three 1 in. Sprocket Wheels, two of which are respectively numbered 69 and 70, is journalled in Angle Girders 45, being held in place by 8-hole Bush Wheels, to each of which a 4 in. Circular Plate 71 is secured. Fixed in this Circular Plate is a Threaded Pin, on which a 9½ in. Strip 72 is held by a Collar. At its other end the Strip is held by a Collar on an Adaptor for Screwed Rod, fixed to the Angle Girder 3 by Bolt 73.

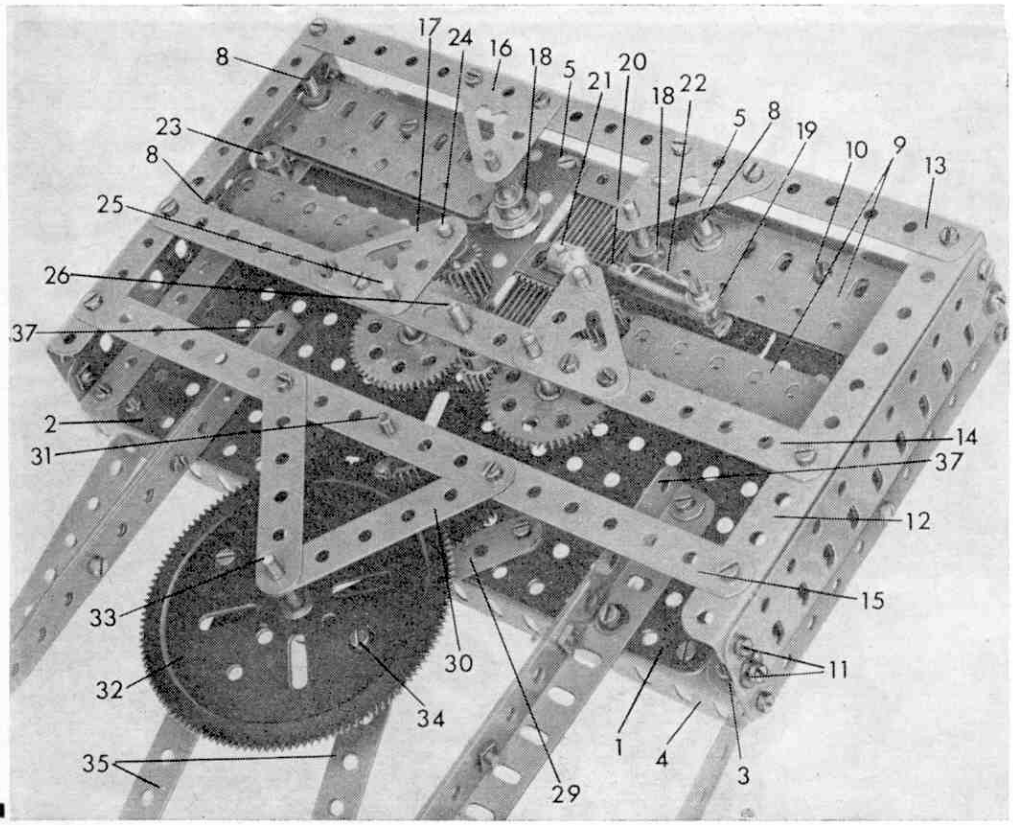
With the Laysword at the front centre of the Loom, and with the top of the Heald frames level with each other, Sprocket Wheels 63 and 69 are connected by Chain, as also are the corresponding Sprocket Wheels at the other ends of the Rods holding Sprockets 63 and 69. Mounted on 6½ in. Rod 74 are two Couplings 75 and 76. In each of these an 8 in. Rod 77 is fixed, being held, at its other end, in Slotted Strip 36 by Collars placed one each side of the Strip. Another 8 in. Rod 78, carrying two 2 in. Sprocket Wheels 79, is mounted in Angle Girders 42, being supported in the centre by a 1½ in. Strip attached to a 1 in. by ½ in. Angle Bracket bolted to 5½ in. Angle Girder 80. Each Sprocket Wheel, in turn, carries a ½ in. loose Pulley held by a Collar on a Threaded Pin, the shank of which points outwards. The Sprockets are arranged so that the Threaded Pins are diametrically opposite each other. With the Laysword at the front centre, Circular Plate 71 is turned until the Laysword has moved 3 in. from the front of the Loom, then Sprocket Wheels 64 and 79 are connected by Chain.

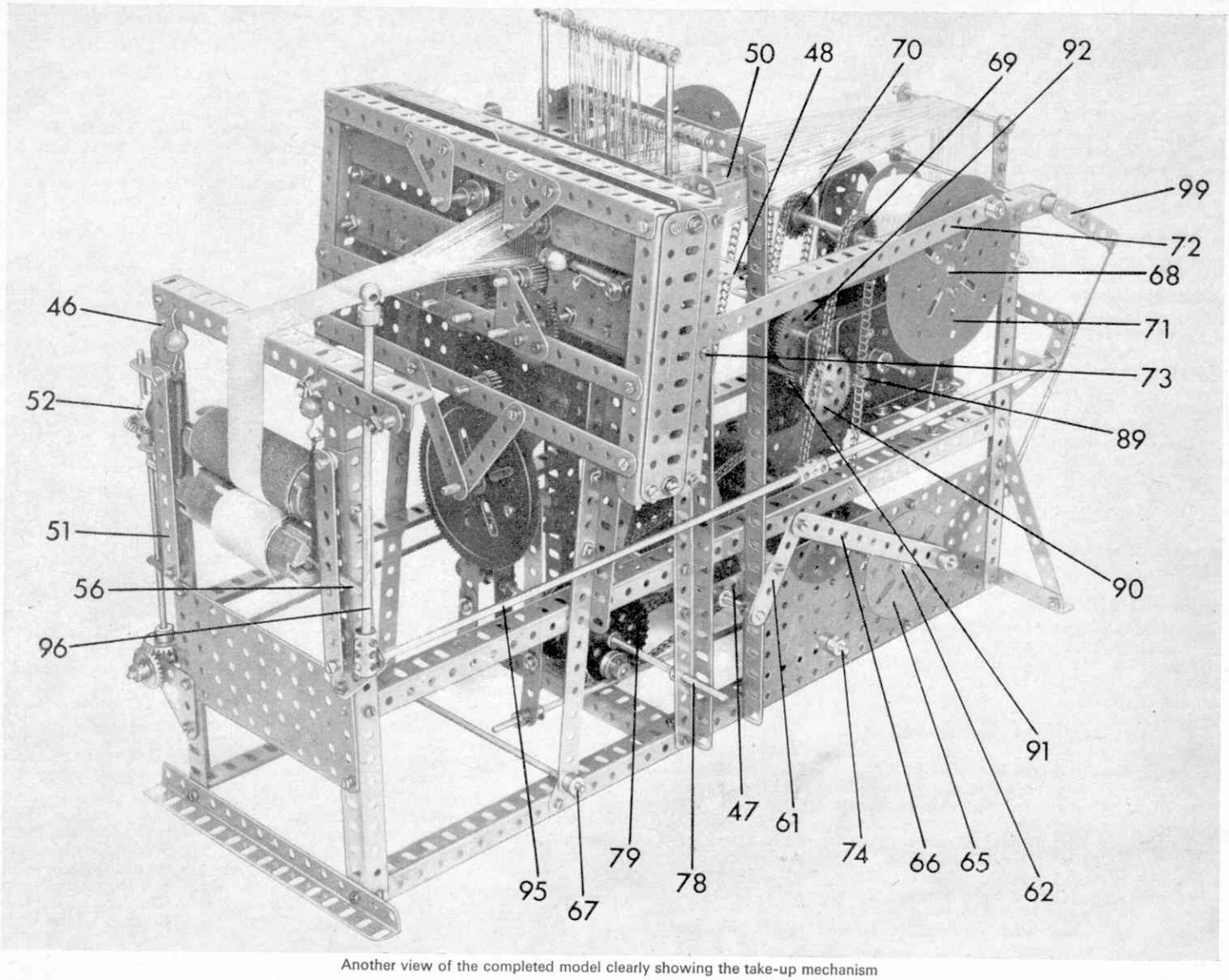
The take-up motion is assembled by securing a Worm 81 to the end of Rod 78. This worm engages with a 57-teeth Gear 82 on an 11½ in. Rod 83, journalled in 1½ in. Corner Brackets bolted to Girders 41 and 42. Mounted transversely on this Rod is a short Coupling 84, which supports the earlier-mentioned Rod 53; ⅞ in. Bevel Gears 85 and 86 are added to the ends of both the Rods, Bevel 85 being spaced from the Coupling by Washers. A Collar, placed in Rod 83 against the Coupling, holds the Bevels in mesh.

MOTOR DRIVE

A Meccano E15R Electric Motor is bolted to two 5½ in. Angle Girders 87 and 88, fixed between Girder 39 at each side. The Motor sideplates are extended by two holes by 3 in. by 1½ in. Flat Plates, as shown. A 7/16 in. Pinion, secured to the armature shaft of the

A close-up view of the laysword used in the Ribbon Loom





Another view of the completed model clearly showing the take-up mechanism

Motor, is meshed with a 60-teeth Gear Wheel on a 2½ in. Rod, journalled in the Motor sideplates that carries a ½ in. Pinion 89 at its other end. This Pinion, in turn, meshes with a 57-teeth Gear Wheel 90 and another 2½ in. Rod, journalled in the 3 in. by 1½ in. Flat Plates. Mounted in the centre of this Rod is a second ½ in. Pinion 91 that is meshed with another 57-teeth Gear 92, fixed on a third 2½ in. Rod, also journalled in the Flat Plates. Mounted on the end of this Rod is a 1 in. Sprocket Wheel, which is connected by Chain to Sprocket Wheel 70.

Fixed to the central arm of the Motor switch is an adaptor for Screwed Rod, on which a 4½ in. Strip 93 is held by a Collar. The other end of the Strip is lock-nutted to a Crank 94, fixed on a compound rod 95, obtained from an 8 in. and an 11½ in. Rod joined by a Coupling, journalled 1½ in. Corner Bracket bolted to Girders 40 and 41. At the other end of compound rod 95, a Coupling carrying a 6½ in. Rod 96, is fixed. Rod 96 is mounted between the 7½ in. Angle Girder bolted between Girders 46 and a 2½ in. Strip, held on ¾ in. Bolts and tensioned by Compression Springs, as shown. When Rod 96 is against the inner ¾ in. Bolt, the Motor starting switch should be in the 'off' position.

SHUTTLE

A 3½ in. Rack Strip which has had its sharp corners filed away at the top and ends is fitted with two Nuts and Bolts, secured one hole from each end, the edges of the Nuts to be parallel to the edge of the Rack Strip. Collars 19 and 21 are screwed on these Bolts. A 1½ in. Rod 20, forming the shuttle spindle, is wound with very thin thread by placing it in a Coupling fixed to the output shaft of the Motor. Beginning against the Coupling and moving forward ⅜ in., the thread should be built up like a cone and winding should continue backwards and forwards on the slanting edge of this cone till the Rod is filled. The Rod is now loosely mounted in Collar 19. If necessary, the Bolt holding the Collar in position should be filed down so that it does not grip the Rod.

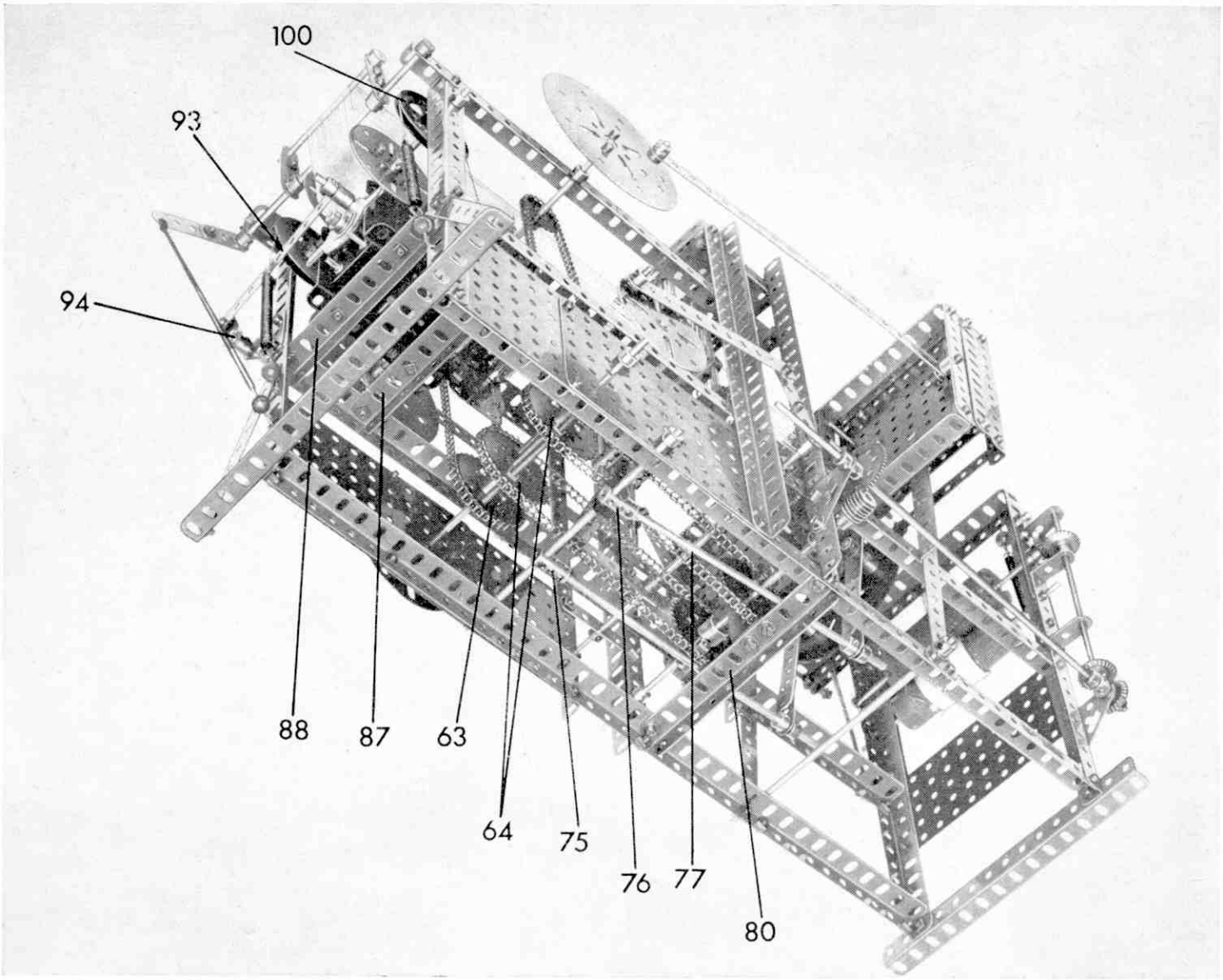
With the Rod in place, the thread is passed into the longitudinal smooth bore of Collar 21 and out by way of the Grub Screw hole. A small piece of cotton wool is put into the bore to tension the thread. A Meccano Heald is now cut just below the eye leaving a straight length of wire 22 with a small loop at the end. The wire is twisted around a Bolt which is then screwed, along with two Washers, into the unused transversed tapped bore of Collar 19. The loop should lie midway between Collars 19 and 21, and note that the Bolt in this case must grip Rod 20. The thread, which should come off the Rod fairly easily, is passed through the loop, then the completed shuttle is placed in the grooves in the arrangements built up from Flat Girders 9. A Threaded Boss 23 is bolted in each Angle Girder 3 as shown.

SHUTTLE OPERATING MECHANISM

A ½ in. by ½ in. Pinion is fixed on a 2 in. Rod 24, four Washers spacing it from Flat Plate 2. In constant mesh with the Pinion is a 57-teeth Gear Wheel mounted on another Rod 25, three Washers being used as spacers. A second ½ in. by ½ in. Pinion is secured to another 2 in. Rod 26, one Washer being used as a spacer. At its other side, the Pinion is in mesh with a second 57-teeth Gear which, in turn, meshes with a third ½ in. by ½ in. Pinion, as shown. Incidentally, a 2½ in. Strip 27, placed on Rods 25, provides the rear bearing for Rod 26. Rods 25 and 26 are held in place by Collars behind the Flat Plates.

Bolted to Flat Plates 4 are a 3½ in. Strip 28 and a 3 in. Strip 29, while two 3 in. Strips 30 are bolted to 9½ in. Strip 15. A Rod 31, carrying a ½ in. Pinion and a 2½ in. Gear Wheel, is journalled in Strips 15 and 17. The 2½ in. Gear engages with the ½ in. Pinion on Rod 26. A 3½ in. Gear Wheel 32 is mounted on a 2 in. Rod 33 journalled in Strips 29 and 30. Two Bolts 34 are passed through diametrically opposite holes in Gear 32, after which an Adaptor for Screwed Rod is fixed on their shanks. The two Bolts must be parallel to the Rack Strip when the Rack Strip is in the exact centre of the laysword.

Two 4½ in. Strips 35, extended by 2 in. Slotted Strips 36, are loosely mounted on the Screwed Rod Adaptors, being held in place by Collars. Two 5½ in. Angle Girders 37, lengthened by a 7½ in. Strip, are then bolted



An underneath view of the Loom showing the extensive use of Sprocket Wheels and Chain for transferring drive to the various moving parts of the model

to Flat Plate 2. Gear Wheel 22 should now be moved to and fro (using very little power) thus causing the shuttle to travel from side to side. Any necessary adjustments should now be made until the operation works quite smoothly.

WARP THREAD TENSION DEVICE AND BEAM

Two Cranks, extended by 1½ in. Strips are secured to a 6½ in. Rod 97, journalled in Girders 45. The 1½ in. Strips are then connected by a 3½ in. Rod 98, held by Collars. Another Crank, extended by a 3 in. Strip 99 is mounted on Rod 97, being tensioned by a 10 in. Driving Band attached to a Loaded Hook.

Two Face Plates are connected together by four 1½ in. by ½ in. Double Angle Strips and are fastened on a 6½ in. Rod, to form the Warp Thread Beam. Two 2 in. Pulleys 100 are added to the Rod, which is then journalled in Girders 40, being held in place by Collars. Lengths of Cord, attached to Angle Girders 87 are passed over the Pulleys and attached to Tension Springs anchored to Angle Girders 40 by Loaded Hooks. Two 9½ in. Strips 101 are crossed, and bolted to Angle Girders 38, first being joined together by a Bolt through their centre holes.

WARP BEAM PREPARATION

For the Weft thread we recommend that Sly-ko No. 40 to No. 50 be used, and Sly-ko No. 10 to No. 20 for the Warp threads. To prepare the Warp threads ready for the beam, two 6 in. nails which we will call A and B are placed on a flat surface about three yards apart. Another two 6 in. nails C and D, 3 in. apart, are then placed between them with about 18 in. separating them from nail A. A thread is now fastened to nail A, is passed over nail C and under nail D, is passed around nail B, taken over nail D and under nail C to be finally passed around nail A. This sequence is repeated until 51 threads have been used.

Using a comb or a built-up reed the threads are divided evenly over a width of 1½ in., then, where they have been cut off nail A, they are tied together in one large knot. This knot is placed in the centre of the warp beam, between two of the Double Angle Strips, and the beam axle placed through the centre of the threads. With the comb or Reed held by a friend in front of the beam, the threads will fan out to the width of the Face Plates, as the threads are tightly wound around the beam.

Nails C and D are now replaced by two 8 in. Rods fastened at the ends by Couplings. With all the Warp wound on the beam, the threads are cut off at nail B. The beam is now mounted in the Loom without the comb or Reed, but the 8 in. Rods remaining in position about 1 ft. from the ends of the threads.

Having placed the beam in position with the Cords tensioned around the 2 in. Pulleys 100, the 8 in. Rods are temporarily mounted in 9½ in. Girders 45 near the back of the Loom. The first thread at either side is now taken from the 8 in. Rods and passed through the eye of the corresponding first Heald on the front frame, then the second thread is taken from the 8 in. Rods and passed through the first Heald on the rear frame. This sequence is repeated until all the threads have been drawn through the Healds, after which the first three threads are passed through the first dent or slot in the Reed. The next three threads are passed through the second dent and so on. When finished, the threads are brushed until they lie evenly and then are passed around the sand paper-covered Wood Roller to be fixed to the ordinary Wood Roller by a 2 in. Rod in its groove. The Motor must not yet be started.

With the Shuttle Rod wound with thread, Circular Plates 71 are slowly turned in the direction of the arrow to make quite certain that the Heald frames are nearly fully open when the Shuttle is about to pass through the opening or 'shed' of the threads. The shed must, of course, remain open until the Shuttle has passed through. The sequence should be continued to ensure that the Shuttle returns in a similar manner.

Slotted Strips 36 are adjusted so as to keep the Shuttle against the Threaded Bosses after passing through the shed. If this is not done

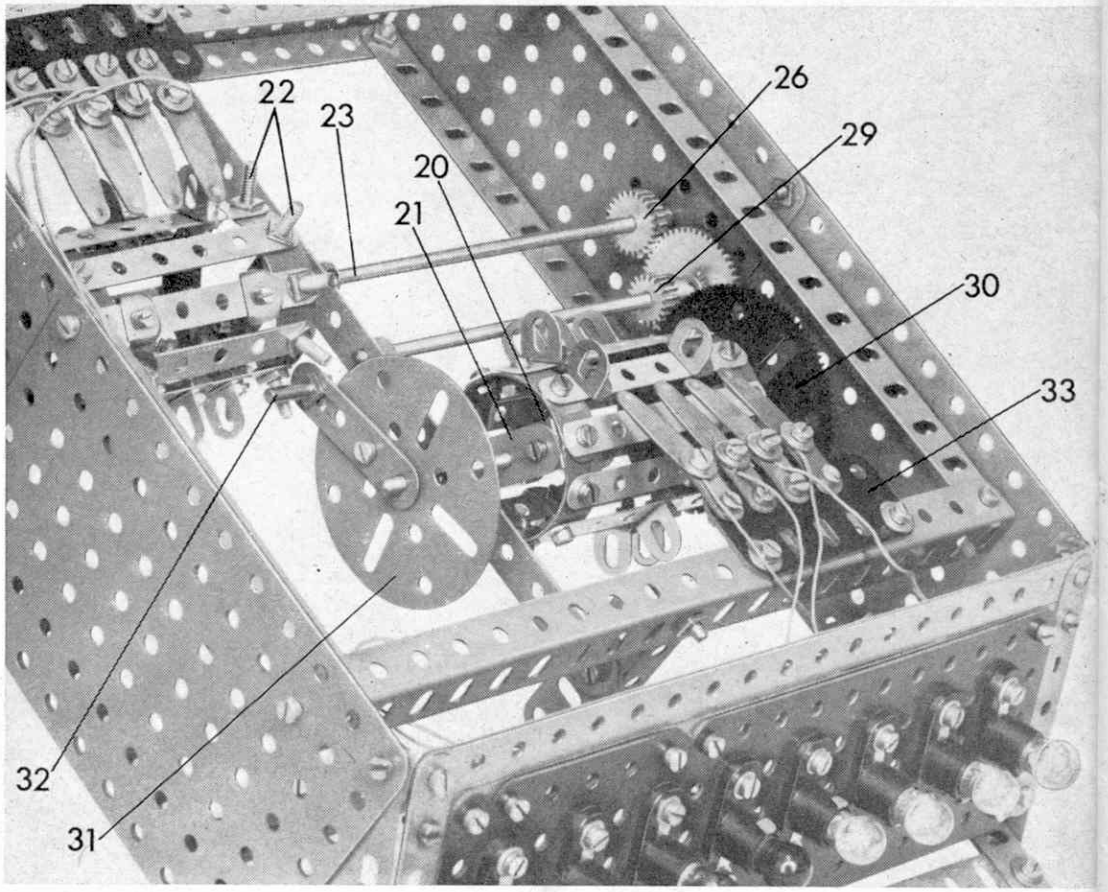
Continued on page 46

33 to the top terminals of the first four Lamp Holders to the right of the model, while further lengths of insulated wire are taken from the remaining four Wiper Arms to the upper terminals of the left-hand Lamp Holders.

Two terminals, to receive current from the power source, are built up and are attached to Angle Girder 3. One terminal A is obtained by fixing a $\frac{3}{8}$ in. Bolt in an Insulating Fishplate with a Nut, and by adding a Terminal Nut to hold the power source lead in place. The other terminal B is built up in a similar manner, except that an ordinary, metal Fishplate is used. This Fishplate must make an electrical contact with Girder 3, which can be done by scraping off a little of the enamel on the Girder. Terminal A is connected to the lower terminal of any one of the Lamp Holders, using insulated wire.

The Wiper Arms must be positioned as to lie directly over the vertical lugs of the Angle Brackets fixed to Narrow Strips 19. As the cylinders are turned different Wiper Arms make contact with different Angle Brackets or combinations of Angle Brackets, thus causing the Lamps to light in sequence. Before starting to count, the cylinders must be arranged so that the Wiper Arms are above the blank Narrow Strips, to give zero.

To discover the 'code', Face Plate 28 is turned once and a note made of the Lamp which lights up. The Face Plate is turned again, causing another Lamp to light up which is noted. The operation is repeated until the blank Narrow Strip is again uppermost. You will find that Face Plate 28 has been turned ten times, the first nine revolutions causing the four right-hand Lamps to light in sequence. With the tenth revolution, Threaded Pin 32 will have caused the secondary cylinder to revolve one-tenth of a turn, causing one of the four left-hand Lamps to light up. If you continue to turn Face Plate 28, this Lamp will remain lit, while the four right-hand Lamps again light up in the sequence already noted. After another ten revolutions of Face Plate 28 a second Lamp in the left-hand 'block' will light up, and so on until the secondary cylinder has made one complete revolution, when the machine is again at zero. At this stage Face Plate 28 will have been turned one hundred times. To sum up, the right-hand block of Lamps counts the units while the left-hand block counts the tens.



A close-up view showing the primary cylinder and gearing

Parts required

5 of No. 1a	2 of No. 22	2 of No. 109	8 of No. 539
4 of No. 2	1 of No. 25	10 of No. 111a	8 of No. 540
2 of No. 4	1 of No. 26	18 of No. 111c	(any colour)
2 of No. 6a	1 of No. 27	2 of No. 115	2 of No. 542
2 of No. 8	1 of No. 27c	2 of No. 155	1 of No. 558
7 of No. 8a	178 of No. 37a	2 of No. 225	
2 of No. 9d	142 of No. 37b	20 of No. 235a	
1 of No. 10	33 of No. 38	1 of No. 502	
42 of No. 12	4 of No. 52a	2 of No. 507	
1 of No. 13a	1 of No. 55a	1 of No. 510	
1 of No. 14	4 of No. 59	1 of No. 511	
1 of No. 14a	2 of No. 62b	1 of No. 513	
1 of No. 16a	1 of No. 63	8 of No. 532	

Meccano loom from page 35

the Shuttle may foul the Warp threads when entering the shed.

Provided all the above instructions have been carefully followed, the Loom should now run under power without trouble. If the woven fabric buckles between the Reed and the take-up roller, however, the Weft thread is too thick and should be replaced by thinner thread. If the fabric has little loops at the edges, the Weft thread is too slack and requires the cotton wool in the Shuttle pushing further into the Collar. Great care must be taken, however, because, if the tension is too great, it will prevent the Shuttle from reaching the Threaded Bosses or will cause the Shuttle to spring back into the Warp threads. Should the Rack Strip catch the bottom threads of the shed, the Heald frames need lowering by moving the Collars at the ends of $4\frac{1}{2}$ in. Strips 60.

PARTS REQUIRED

6 of No. 1a	2 of No. 2	1 of No. 3
2 of No. 1b	13 of No. 2a	23 of No. 4
6 of No. 5	1 of No. 26c	24 of No. 69a
3 of No. 6a	5 of No. 27a	1 of No. 70
4 of No. 7a	1 of No. 27b	2 of No. 73
4 of No. 8	1 of No. 27c	2 of No. 77
10 of No. 8a	1 of No. 27d	2 of No. 80a
2 of No. 8b	4 of No. 30	2 of No. 81
9 of No. 9	1 of No. 32	6′ 6″ of No. 94
2 of No. 9a	2 of No. 35	6 of No. 95
2 of No. 9d	236 of No. 37a	4 of No. 96
8 of No. 12	196 of No. 37b	52 of No. 101
2 of No. 12a	134 of No. 38	4 of No. 103
2 of No. 13	4 of No. 43	16 of No. 103d
10 of No. 13a	1 of No. 46	4 of No. 103f
8 of No. 14	4 of No. 48	2 of No. 106
1 of No. 16	2 of No. 48d	4 of No. 109
3 of No. 16a	6 of No. 52a	1 of No. 110
4 of No. 16b	2 of No. 55a	10 of No. 111
10 of No. 17	5 of No. 57c	6 of No. 111c
1 of No. 18a	52 of No. 59	6 of No. 115
2 of No. 20a	6 of No. 62	2 of No. 120b
2 of No. 23	2 of No. 62b	8 of No. 133
2 of No. 23a	12 of No. 63	1 of No. 136a
2 of No. 24	1 of No. 63d	2 of No. 146a
3 of No. 26	2 of No. 64	5 of No. 173a
3 of No. 26a	24 of No. 69	1 of No. 186a
		1 E15R Electric Motor

Made in Hong Kong from page 37

other American cars of today an automatic transmission system is fitted as standard, while optional extras include power steering, compass and translucent floor mats!

In the case of the Buick Riviera, only one version is available, this being described by the manufacturers as a 'two-door hard-top coupé'. The power plant comes in the form of a 6,965 c.c. capacity V-8 engine, developing 360 b.h.p. It gives the car a maximum speed of something like 120 m.p.h. and allows it to cruise over long distances at little under the 100 m.p.h. mark. Again, automatic transmission is fitted as standard.

Before finishing, I should just like to say that I expect a few collectors to dislike the new models, simply because they are made in Hong Kong. I, personally, think that they are perfectly good Dinky Toys, especially for the price, and I am sure you will agree with me that they should be judged on their merits —not on their country of manufacture.